Amendments to the claims:

1 (currently amended): A method of isolating sources of variance in parametric data comprising steps of:

receiving a data set of measurements for a plurality of physical parameters;

cleaning the data set to remove measurements that may introduce error;

generating a principal component analysis basis from the cleaned data set;

estimating an independent component analysis model from the principal component analysis basis;

calculating percentages of variance for the plurality of parameters explained by each component in the estimated independent component analysis model;

removing a component from the principal component analysis basis when the calculated percentages of variance indicate that the component is a minor component[[,]]; and

generating as output the estimated independent component analysis model excluding the minor component; and

identifying a physical mechanism corresponding to a significant component of the estimated independent component analysis model.

2 (previously presented): The method of Claim 1, the calculated percentages of variance indicating that a component is a minor component when a percentage of variance for each of the plurality of parameters explained by the component is less than a minimum percentage of variance for a single parameter.

3 (previously presented): The method of Claim 1, the calculated percentages of variance indicating that a component is a minor component when an average percentage of variance for the plurality of parameters explained by the component is less than a minimum average percentage of variance.

4 (previously presented): The method of Claim 1 further comprising a step of calculating confidence intervals for rotation angles of the estimated independent component analysis model.

5 (previously presented): The method of Claim 4 further comprising a step of labeling a component of the estimated independent component analysis model to correspond to a specific physical process.

6 (previously presented): The method of Claim 5 further comprising a step of labeling the component as critical dimension of gate width effect on device drive current, critical dimension of gate width effect on device threshold voltage, critical dimension of gate length effect, implant dose effect, and gate oxide thickness effect.

7 (previously presented): The method of Claim 5 further comprising a step of examining the labeled component to identify the corresponding physical mechanism associated with the specific physical process.

8 (currently amended): A computer readable storage medium tangibly embodying instructions for a computer that when executed by the computer implement a method for isolating sources of variance in parametric data, the method comprising steps of:

receiving a data set of measurements for a plurality of physical parameters;

cleaning the data set to remove measurements that may introduce error;

generating a principal component analysis basis from the cleaned data set;

estimating an independent component analysis model from the principal component analysis basis;

calculating percentages of variance for the plurality of parameters explained by each component in the estimated independent component analysis model;

removing a component from the principal component analysis basis when the calculated

percentages of variance indicate that the component is a minor component[[,]]; and

generating as output the estimated independent component analysis model excluding the minor component; and

identifying a physical mechanism corresponding to significant components of the estimated independent component analysis model.

9 (previously presented): The computer readable storage medium of Claim 8, the calculated percentages of variance indicating that a component is a minor component when a percentage of variance for each of the plurality of parameters explained by the component is less than a minimum percentage of variance for a single parameter.

10 (previously presented): The computer readable storage medium of Claim 8, the calculated percentages of variance indicating that a component is a minor component when an average percentage of variance for the plurality of parameters explained by the component is less than a minimum average percentage of variance.

11 (previously presented): The computer readable storage medium of Claim 8 further comprising a step of calculating confidence intervals for rotation angles of the estimated independent component analysis model.

12 (previously presented): The computer readable storage medium of Claim 11 further comprising a step of labeling a component of the estimated independent component analysis model to correspond to a specific physical process.

13 (previously presented): The computer readable storage medium of Claim 12 further comprising a step of labeling the component as critical dimension of gate width effect on device drive current, critical dimension of gate width effect on device threshold voltage, critical dimension of gate length effect, implant dose effect, and gate oxide thickness effect.

14 (previously presented): The computer readable storage medium of Claim 12 further comprising a step of examining the labeled component to identify the corresponding physical mechanism associated with the specific physical process.